



ENVIRONMENTAL QUALITY

WATER PROTECTION BUREAU

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DEQ/WPB
PERMITTING & COMPLIANCE DIV.

Agency Use

Permit No.:

MTG010268

Date Rec'd

6/11/12

Rec'd By

[Signature]

FORM
NMP

Nutrient Management Plan

READ THIS BEFORE COMPLETING FORM: Before completing this form (Form NMP), Concentrated Animal Feeding Operation (CAFO) operators need to read the General Permit, particularly Part IV.A. CAFO operators also need to read the "Instructions For Filling Out Form NMP," found at the back of the Form. Form NMP is intended to help CAFO operators develop a site-specific Nutrient Management Plan, in compliance with Part IV.A of the General Permit and all applicable State rules and statutes. Your Nutrient Management Plan must be maintained at the site as required in Part III of the General Permit. Sections B and C on your Form NMP must state the information exactly the same way as it was stated on the most recently submitted version of your Form 2B. Attach additional pages as necessary, indicating the corresponding section number on this NMP form. For additional help in filling out this form please read the attached instructions. The 2008 General Permit, current fee schedule, and related forms are available from the Water Protection Bureau at (406) 444-3080 or <http://www.deq.mt.gov/wqinfo/MPDES/CAFO.asp>

Section A - NMP Status (Check one):

- ☒ New No prior NMP submitted for this site.
☐ Modification Change or update to existing NMP.

Permit Number: MT 010268 (Specify the permit number that was previously assigned to your facility.)

Section B - Facility or Site Information:

Site Name Diamond K Feedlot

Site Location NW 1/4 of NE 1/4 Sec 8 Township 9N Range 48E

Nearest City or Town Kinsey County Custer

Section C - Applicant (Owner/Operator) Information:

Owner or Operator Name Diamond K Feeds and Feeding Inc.

Mailing Address 2892 Kinsey Rd

City, State, and Zip Code Kinsey, MT 59338

Phone Number (406) 234-5474 Email viall@midrivers.com

COPY

Section D - NMP Minimum Elements:**1. Livestock Statistics**

<i>Animal Type and number of animals</i>	<i># of Days on Site (per year)</i>	<i>Annual Manure Production (tons, cu. yds. or gal)</i>
1. Beef Cattle - 1500	150	1283 ton
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Method used for estimating annual manure production:

Circular DEQ 9, Sec 2 Table 2

2. Manure Handling

Describe manure handling at the facility:

Manure is left in pens, scraped and spread on fields annually. Manure is not piled or stored for any length of time.

Frequency of Manure Removal from confinement areas:

Annually; normally starting in mid summer and continuing till fall.

Is this manure temporarily stored in any location other than the confinement area? ☐ Yes ☒ No
If so then how and where?

Is manure stored on impervious surface? ☐ Yes ☒ No

If yes, describe type and characteristics of this surface:

3. Waste Control Structures

Waste Control Structure (name/type)	Length (ft)	Width (ft)	Depth (ft)	Volume (cubic ft or gallons)
1. Clean Water Diversion Dike	909			
2. Temporary Storage Pond				335,600 gal
3. Effluent Pump				200 gpm
4. Effluent Transfer Pipeline	670			6" PVC buried
5. Vegetative Treatment Area				3.7 acres
6. Gated Pipe for Effluent	480			10" gated pipe
7.				
8.				
9.				
10.				
11.				
12.				

4. Disposal of Dead Animals

Describe how dead animals are disposed of at this facility:

Any dead animals are removed from from their pens within 24 hours. A dead animal disposal pit is located about 100' north of the northern-most pen fence and about 50' west of the silage pit and about 100' east of the VTA. Dead animals are stored at the edge of the pit no longer than 30 days. Every 30 days or less the dead animals are pushed into the pit and covered with at least 2' of soil.

5. Clean Water Diversion Practices

Describe how clean water is diverted from production area:

Clean water is diverted around the Feedlot by dikes designed by the NRCS. Please refer to the NRCS design.

6. Prohibiting Animals and Wastes from Contact with State Waters

Describe how animals and wastes are prohibited from direct contact with state waters:

All animals are contained in their pens away from State Waters. Wastes are diverted into a holding pond that is pumped to a Vegetative Treatment Strip for proper disposal. There are no free roaming cattle on this farm that might enter the Vegetative Treatment Strips.

All animals are contained in their pens away from State Waters. Waste water is diverted into a holding pond that is pumped to a Vegetative Treatment Area for proper disposal. There are no free roaming animals on this farm that might enter the holding pond or VTA.

Describe how chemicals and other contaminants are handled on-site:

There are no other chemicals or contaminants on site

8. Best Management Practice (BMPS)

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **production area**. Indicate the location of these measures. Include a schedule for implementation of each of these measures. Examples of BMP measures could include but are not limited to: constructing ditches, terraces, and waterways above an open lot to divert clean water run on; installing gutters, downspouts and buried conduits to divert roof drainage; providing more roofed area; decreasing open lot surface area; repairing or adjusting water systems to minimize water wastage; using practical amounts of water for cooling purposes; recycling water if practical and applicable.

Refer to NRCS design for all structural Best Management Practices.

Describe in detail all temporary, permanent and structural Best Management Practices (BMPs) which will be used to control runoff of pollutants from facility's **land application area**. Indicate the location of these practices. If not already in use, include a schedule for implementation of each of these measures. Attached details and specifications may be used to supplement this description. Examples of BMP measures could include but are not limited to: maintaining setbacks from surface waters for manure applications; managing irrigation practices to prevent ponding of wastewater on land application sites; never spray irrigating wastes onto frozen ground; consulting with the Department prior to applying any liquid waste to frozen or snow-covered ground; applying wastes at agronomic rates.

Plant sampling/tissue analysis	yes/no <input checked="" type="checkbox"/>	Rotational grazing	yes/no <input checked="" type="checkbox"/>
Conservation or reduced tillage	<input checked="" type="checkbox"/> yes/no	Manure injection or incorporation	yes/no <input checked="" type="checkbox"/>
Terraces or other water control structures	yes/no <input checked="" type="checkbox"/>	Contour plantings	yes/no <input checked="" type="checkbox"/>
Riparian buffers or vegetative filter strips	<input checked="" type="checkbox"/> yes/no	Winter "scavenger" or cover crops	yes/no <input checked="" type="checkbox"/>
Other examples _____			

9. Implementation, Operation, Maintenance and Record Keeping – Guidance

The permittee is required to develop guidance addressing implementation of NMP, proper operation and maintenance of the facility, and record keeping as described in Part II of the permit.

Has a guidance document been developed for the facility? ☒ Yes No

Certify the document addresses the following requirements:

Implementation of the NMP:	<input checked="" type="checkbox"/> Yes	No
Facility operation and maintenance:	<input checked="" type="checkbox"/> Yes	No
Record keeping and reporting:	<input checked="" type="checkbox"/> Yes	No
Sample collection and analysis:	<input checked="" type="checkbox"/> Yes	No
Manure transfer:	<input checked="" type="checkbox"/> Yes	No

Provide name, date and location of most recent documentation:

Diamond K Feedlot Operations Plan, 6/12, at the Diamond K office and posted at the Diamond K shop.

If your answer to any of the above question is no, provide explanation

Section E – Land Application

Will manure be land applied to land either owned, rented, or leased by the owner or operator of the facility?

No If no, then provide an explanation of how animal waste at this site are managed.

■ Yes If yes, then the information requested in Section E must be provided.

Photos and/or Maps

Attach an aerial photograph or map of the site where manure is to be applied. (Use multiple photos/maps if necessary to show required details.) The photo(s)/map(s) must be printed on no larger than an 11"x17" piece of paper, and must clearly identify the following items:

- Individual field boundaries for all planned land application areas
- A name, number, letter or other means of identifying each individual land application field
- The location of any down-gradient surface waters
- The location of any down-gradient open tile line intake structures
- The location of any down-gradient sinkholes
- The location of any down-gradient agricultural well heads
- The location of all conduits to surface waters
- The specific manure/waste handling or nutrient management restrictions associated with each land application field.
- The soil type(s) present and their locations within the individual land application field(s)
- The location of buffers and setbacks around state surface waters, well heads, etc.

Land Application Equipment Calibration

Describe the type of equipment used to land apply wastes and the calibrating procedures:

Manure is applied with a dry waste spreader. Net weights of manure is documented. Once manure is applied, a tons/acre value is obtained.

Manure Sampling and Analysis Procedures

A representative manure sample will be analyzed a minimum of once annually for Total Nitrogen, and Total Phosphorus. Analysis results will be reported in lbs/ton or lbs/1,000 gal. Results of these analyses will be used in determining application rates for manure, litter, and process wastewater.

Manure Sample collection will occur according to the following method:

■ The recommended method(s) found in Section 5 of Department Circular DEQ 9

Other (describe) _____

Soil Sampling and Analysis Procedures

A representative soil sample from the top 6 inch layer of soil in each field will be analyzed for phosphorus content at least once every five years. Analyses will be conducted by a qualified laboratory, using the Olsen P test. Results will be reported in parts per million (ppm) and will be used in determining application rates for manure, litter, and process wastewater.

Soil sample collection will occur according to the following method:

■ The recommended method(s) found in Section 5 of Department Circular DEQ 9

Other (describe) _____

Phosphorus Risk Assessment

The permittee shall assess the risk of phosphorus contamination of state waters. An assessment shall be conducted for each field, under the control of the operator, to which manure, litter or process wastewater will or may be applied. If a new field is added in the future, then the permittee must submit a revised (modified) NMP. The permittee has the option of using either Method A or Method B (below) to complete the assessment. Copies of all tables and calculations used to complete the assessments, as well as the results of the assessments, shall be submitted to the Department and copies shall be maintained on-site at the facility and available for Departmental review. The results of the assessments shall be used to determine the appropriate basis for land application of wastes from the facility.

Method Used

Indicate which method will be used to determine phosphorus application:

- ☒ Method A – Representative Soil Sample
Method B – Phosphorus Index

Method A – Representative Soil Sample

- Obtain one or more representative soil sample(s) from the field.
- Have the sample analyzed for Phosphorus by a qualified lab. The “Olsen P test” must be used for the analysis, and the result must be reported in parts per million (ppm).
- Using the results of the Olsen P test, determine the application basis according to the Table below

Soil Test	
<i>Olsen P Soil Test Result (ppm)</i>	<i>Application Basis</i>
<25.0	Nitrogen Needs Of Crop
25.1 - 100.0	Phosphorus Needs Of Crop
100.0 - 150.0	Phosphorus Needs up to Crop Removal Rate
>150.0	No Application

Method B – Phosphorus Index

- Complete a Phosphorus Index according to for each crop grown on each field. Complete table in Appendix A to calculate phosphorus index. For information on filling out specific sections Appendix A, please refer to Attachment 2 of Department Circular DEQ 9.
- Using the calculated Total Phosphorus Index Value, assign the overall site/field vulnerability to phosphorus loss according to the table below.

Total Phosphorus	
<i>Total Phosphorus Index Value</i>	<i>Site Vulnerability to Phosphorus Loss</i>
<11	Low
11-21	Medium
22-43	High
>43	Very High

- Using the calculated Site Vulnerability to Phosphorus Loss, determine the appropriate application basis according to the table below.

Site Vulnerability to Phosphorus Loss	
<i>Site Vulnerability to Phosphorus Loss</i>	<i>Application Basis</i>
Low	Nitrogen Needs
Medium	Nitrogen Needs
High	Phosphorus Need Up to Crop Removal
Very High	Phosphorus Crop Removal or No Application

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	LP West Spreadable acres 51
Crop 1 (year 1 or ?) plant species	Alfalfa 2012
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	5
N Content of soil as nitrate (lbs/acre or ppm)	6.3 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	32 ppm
Time of Year When Application will Occur (month)	July
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2012	Site/Field:	LP West			
Nutrient Budget		Nitrogen-based Application			Phosphorus-based Application	
		N	P	K		
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9					271
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable					0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)					0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre					0
minus	Nutrients supplied in irrigation water, lbs/acre					0
equals	Additional Nutrients Needed, lbs/acre					271
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)					14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)					1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal					14
	Additional Nutrients needed, lbs/acre (calculated above)					271
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)					14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre					19.35714286

Comments: Application is for one yr alfalfa plus 2 yrs corn silage.

Actual application rate is planned at 19 tpa in order to maintain Olsen P at 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	BF Spreadable acres 13
Crop 1 (year 1 or ?) plant species	Alfalfa 2012
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	6
N Content of soil as nitrate (lbs/acre or ppm)	5.4 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	32 ppm
Time of Year When Application will Occur (month)	July
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2012	Site/Field:	BF		
Nutrient Budget		Nitrogen-based Application		Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9				187
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable				0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)				0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre				0
minus	Nutrients supplied in irrigation water, lbs/acre				0
equals	Additional Nutrients Needed, lbs/acre				187
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)				14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)				1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal				14
	Additional Nutrients needed, lbs/acre (calculated above)				187
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)				14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre				13.35714286

Comments: Application is for three yr alfalfa.

Actual application rate is planned at 13 tpa in order to maintain Olsen P at 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	Han TP Spreadable acres 7
Crop 1 (year 1 or ?) plant species	Alfalfa 2012
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	5
N Content of soil as nitrate (lbs/acre or ppm)	6
P Content of soil as P2O5 (lbs/acre or ppm)	8 ppm
Time of Year When Application will Occur (month)	July
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2012	Site/Field:	Hans TP		
Nutrient Budget		Nitrogen-based Application		Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9				165
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable				0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)				0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre				0
minus	Nutrients supplied in irrigation water, lbs/acre				0
equals	Additional Nutrients Needed, lbs/acre				165
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)				14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)				1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal				14
	Additional Nutrients needed, lbs/acre (calculated above)				165
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)				14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre				11.78571429

Comments: Application is for three yr alfalfa.
Actual application rate is planned at 14 tpa in order to build soil P.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	UP NE Spreadable acres 45
Crop 1 (year 1 or ?) plant species	Alfalfa 2013
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	7
N Content of soil as nitrate (lbs/acre or ppm)	6.25 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	39
Time of Year When Application will Occur (month)	July
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2013	Site/Field:	UP NE		
Nutrient Budget		Nitrogen-based Application		Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9				231
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable				0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)				0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre				0
minus	Nutrients supplied in irrigation water, lbs/acre				0
equals	Additional Nutrients Needed, lbs/acre				231
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)				14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)				1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal				14
	Additional Nutrients needed, lbs/acre (calculated above)				231
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)				14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre				16.5

Comments: Application is for three yr alfalfa.

Actual application rate is planned at 15 tpa in order to target an Olsen P of 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	UP West Spreadable acres
Crop 1 (year 1 or ?) plant species	Alfalfa 2013
Irrigated (Y/N)	Y
Yield Goal (ton/ac or bushel/ac)	7
N Content of soil as nitrate (lbs/acre or ppm)	6.25 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	39
Time of Year When Application will Occur (month)	July
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2013	Site/Field:	UP West			
Nutrient Budget		Nitrogen-based Application			Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9					231
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable					0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)					0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre					0
minus	Nutrients supplied in irrigation water, lbs/acre					0
equals	Additional Nutrients Needed, lbs/acre					231
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)					14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)					1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal					14
	Additional Nutrients needed, lbs/acre (calculated above)					231
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)					14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre					16.5

Comments: Application is for three yr alfalfa.

Actual application rate is planned at 15 tpa in order to target an Olsen P of 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	Spreadable acres
Hans NT	34
Crop 1 (year 1 or ?) plant species	Corn Silage 2013
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	27
N Content of soil as nitrate (lbs/acre or ppm)	13.4 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	17
Time of Year When Application will Occur (month)	October
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2013	Site/Field:	Hans NT			
Nutrient Budget		Nitrogen-based Application			Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9					324
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable					0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)					0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre					0
minus	Nutrients supplied in irrigation water, lbs/acre					0
equals	Additional Nutrients Needed, lbs/acre					324
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)					14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)					1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal					14
	Additional Nutrients needed, lbs/acre (calculated above)					324
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)					14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre					23.14285714

Comments: Application is for three yr corn silage.

Actual application rate is planned at 25 tpa in order to target an Olsen P of 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	Spreadable acres
Hans ST	16
Crop 1 (year 1 or ?) plant species	Alfalfa 2013
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	5
N Content of soil as nitrate (lbs/acre or ppm)	13.3 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	8
Time of Year When Application will Occur (month)	October
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2013	Site/Field:	Hans ST		
Nutrient Budget		Nitrogen-based Application			Phosphorus-based Application
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9				165
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable				0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)				0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre				0
minus	Nutrients supplied in irrigation water, lbs/acre				0
equals	Additional Nutrients Needed, lbs/acre				165
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)				14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)				1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal				14
	Additional Nutrients needed, lbs/acre (calculated above)				165
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)				14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre				11.78571429

Comments: Application is for three yr corn silage.

Actual application rate is planned at 16 tpa in order to target an Olsen P of 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	UP SW Spreadable acres 36
Crop 1 (year 1 or ?) plant species	Alfalfa 2014
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	7
N Content of soil as nitrate (lbs/acre or ppm)	6.25 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	39
Time of Year When Application will Occur (month)	July
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2014	Site/Field:	UP SW			
Nutrient Budget			Nitrogen-based Application		Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9					231
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable					0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)					0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre					0
minus	Nutrients supplied in irrigation water, lbs/acre					0
equals	Additional Nutrients Needed, lbs/acre					231
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)					14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)					1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal					14
	Additional Nutrients needed, lbs/acre (calculated above)					231
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)					14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre					16.5

Comments: Application is for three yr corn silage.

Actual application rate is planned at 16 tpa in order to target an Olsen P of 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	BF Spreadable acres
Crop 1 (year 1 or ?) plant species	Corn Silage in 2015
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	27
N Content of soil as nitrate (lbs/acre or ppm)	5.4 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	32 ppm
Time of Year When Application will Occur (month)	November
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2014	Site/Field:	BF		
Nutrient Budget		Nitrogen-based Application		Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9				324
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable				0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)				0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre				0
minus	Nutrients supplied in irrigation water, lbs/acre				0
equals	Additional Nutrients Needed, lbs/acre				324
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)				14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)				1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal				14
	Additional Nutrients needed, lbs/acre (calculated above)				324
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)				14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre				23.14285714

Comments: Application is for three yr corn silage.

Actual application rate is planned at 23 tpa in order to maintain Olsen P at 32.

Land Application Data-Narrative approach

The following must be filled out for each field to which manure, litter or process wastewater will or may be applied for the period of the permit (5 years). Use as many sheets as necessary to fulfill this requirement. **Fields with identical crops and soil types may be grouped together.**

Crops and Manure	
Field Name and <u>spreadable acres</u> for each (for fields with identical crops and soils type):	
Field Name	Smith N Spreadable acres 22
Crop 1 (year 1 or ?) plant species	Alfalfa in 2015
Irrigated (Y/N)	y
Yield Goal (ton/ac or bushel/ac)	2
N Content of soil as nitrate (lbs/acre or ppm)	6 ppm
P Content of soil as P2O5 (lbs/acre or ppm)	20 ppm
Time of Year When Application will Occur (month)	November
Application frequency (per year by month)	Once
Form of manure (liquid/solid)	Solid
Method of Application	Dry Spread
Is manure incorporated or broadcast?	Broadcast
Frequency of Application (yearly, biannual, etc.?)	Once per 3 yrs
Crop 2	
Irrigated (Y/N)	
Yield Goal (ton/ac or bushel/ac)	
N Content of soil as nitrate (lbs/acre or ppm)	
P Content of soil as P2O5 (lbs/acre or ppm)	
Time of Year When Application will Occur (month)	
Application frequency (per year by month)	
Form of manure (liquid/solid)	
Method of Application	
Is manure incorporated or broadcast?	
Frequency of Application (yearly, biannual, etc.?)	

d) The permittee will complete the Nutrient Budget Worksheet, below, for each crop grown on each field to which manure or process waste water is or may be applied during the first year of application. A copy of each Nutrient Budget Worksheet will be maintained on site, and a copy will be submitted to the Department.

Nutrient Budget Worksheet

Year	2014	Site/Field:	Smith N			
Nutrient Budget		Nitrogen-based Application			Phosphorus-based Application	
	Crop Nutrient Needs, lbs/acre included in Department Circular DEQ 9					132
minus	Credits from previous legume crops, lbs/acre (from DEQ-9), as applicable					0
minus	Residuals from past manure production, lbs/acre (lbs/acre applied in previous year(s) x fractions listed in DEQ-9)					0
minus	Nutrients supplied by commercial fertilizer and Biosolids, lbs/acre					0
minus	Nutrients supplied in irrigation water, lbs/acre					0
equals	Additional Nutrients Needed, lbs/acre					132
	Total Nitrogen and Phosphorus in manure, lbs/ton or lbs/1,000 gal (from manure test)					14
times	Nutrient Availability factor (for Nitrogen based application see DEQ-9, below; for Phosphorus based application use 1.0)					1
equals	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal					14
	Additional Nutrients needed, lbs/acre (calculated above)					132
divided by	Available Nutrients in Manure, lbs/ton or lbs/1,000 gal (calculated above)					14
equals	Manure Application Rate, tons/acre or 1,000 gal/acre					9.428571429

Comments: Application is for three yr alfalfa

Actual application rate is planned at 12 tpa in order to target an Olsen P of 32.

Section F - CERTIFICATION**Permittee Information:**

This Form NMP must be completed, signed, and certified as follows:

- For a corporation, by a principal officer of at least the level of vice president;
- For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
- For a municipality, state, federal, or other public facility, by either a principal executive officer or ranking elected official.

All Permittees Must Complete the Following Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. [75-5-633, MCA]

A. Name (Type or Print)Arthur viall**B. Title (Type or Print)**President**C. Phone No.**406-951-1844**D. Signature****E. Date Signed**6/9/12

Return the Form NMP, Nutrient Management Plan to:

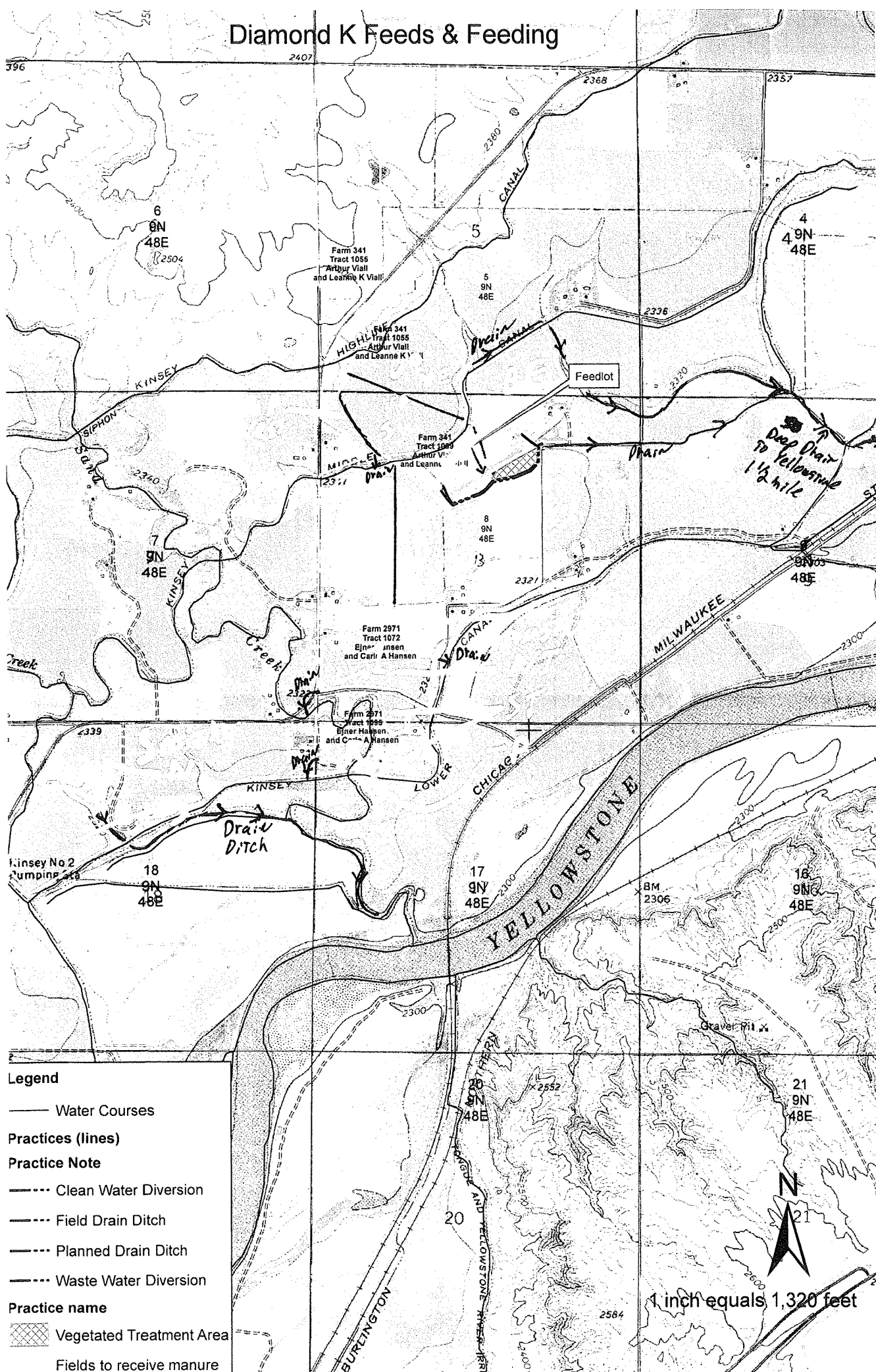
Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620-0901
(406) 444-3080

RECEIVED

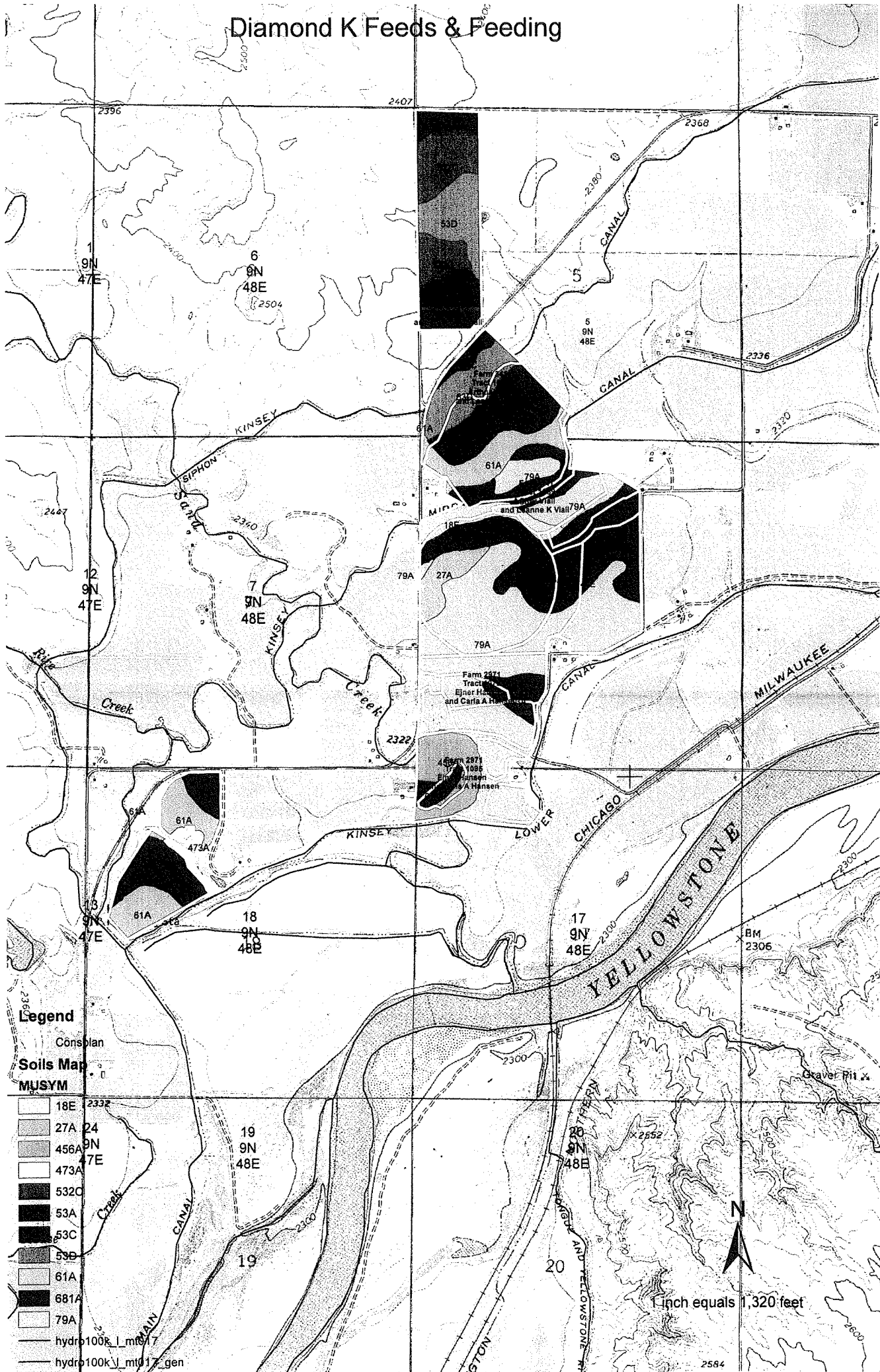
JUN 11 2012

DEQWPB
PERMITTING & COMPLIANCE DIV.

Diamond K Feeds & Feeding



Diamond K Feeds & Feeding



Diamond K Feeds and Feeding
Feedlot Operations Plan

Daily

- Record Census
- Inspect Water Tanks, Correct Overflows
- Inspect Pumping System
- Inspect Berms
- Record Feeding and Vet
- Remove Dead

Monthly

- Summarize Feed and Census Totals
- Bury Dead

Empty Feedlot

- Inspect Facility Weekly

Yearly

- Apply Manure According to NMP Using DK Manure Application Record. Manure may not be transported off Diamond K properties without a modification to the NMP.
- Sample Manure every year using DEQ 9 Sec 5 method
- Sample Soils (every 3 years) using DEQ 9 Sec 5 method
- Revise NMP if Necessary
- Submit annual CAFO Report **By Jan 28**
- Review NRCS Maintenance Guide
- Pump out pipeline and lift pump before freeze up (about Oct 30)
- Reinstall pump when risk of hard freezing is past (about Apr 15), place system in Auto. Inspect VTA pipeline and set gates to discharge into $\frac{1}{2}$ of the VTA.

Precipitation Events

- After rainfall or melting, inspect the facility. If water is going to be pumped out, recheck VTA pipeline.
- If pump down is continuous for more than 3.5 hr, reset gates on the VTA pipeline to send water down the other $\frac{1}{2}$ of the VTA.
- If the pumping system cannot keep up and the storage pond overflows, record on the Operations Log dates and durations. Estimate the duration of the event and at about half way through, sample the overflow stream. Collect 1 pint sample and store in freezer. Contact DEQ for further instructions.

Section 5: Sample Collection and Calibration Procedures

Sampling Manure

A representative manure sample **must** be analyzed a minimum of once annually for Total Kjeldahl Nitrogen, Nitrate-nitrogen, and Total Phosphorus. The results of these analyses **must** be used in determining application rates for manure, litter, and process wastewater.

The accuracy of a laboratory analysis depends on the quality of the manure sample. Manure should be sampled and analyzed before it is land applied. The sample should be collected as close to the time of land application as possible in order to provide the best information about its fertilizer value. However, it is important to allow the laboratory at least three weeks to complete the analysis and return the results. Liquid manure should always be agitated before sampling in order to obtain a representative sample.

Table 6: Sampling Manure

Sampling Solid Manure	<ol style="list-style-type: none"> 1. Manure should be collected from at least 10 different locations that are similar in moisture, feed, hay, and bedding content. Areas near waterers, drains, and feedbunks should be avoided. If sampling stockpiled manure, manure should be collected from several depths, with the exposed outer layer of the pile-avoided. 2. The collected manure should be placed on a hard, flat surface so that a shovel or pitchfork can be used to mix the manure until uniform. 3. Several small samples should be taken from the mixture until about a gallon has been collected. 4. The mixture should be placed in a heavy weight plastic freezer bag identified with name and field. The bag should be squeezed to remove the air and then placed in a second freezer bag to prevent leakage. 5. The sample should be frozen or stored in a cool place until ready to ship.
Sampling Liquid Manure	<ol style="list-style-type: none"> 1. The manure in the storage facility should be agitated thoroughly so that an accurate sample can be obtained. One-quart samples should be collected from at least five different tank spreader loads or locations in the manure storage facility using a clean plastic container. 2. The samples should be poured into a clean, large plastic pail. 3. The contents of the pail should be stirred thoroughly. Several cups of the swirling mixture should be transferred, using a long handled dipper, to a clean, one-quart plastic bottle until the liquid is about two inches from the top of the bottle. 4. The bottle should be placed in a heavy weight re-sealable plastic freezer bag to prevent leakage. 5. The sample should be frozen or stored in a cool place until ready to ship.

Sampling Soil

A representative 0-6-inch soil sample **must** be analyzed a minimum of once every five years for phosphorus content. The result of this analysis **must** be used in determining application rates for manure, litter, and process wastewater.

Soil sampling should be done to allow adequate leadtime for sample analysis, data interpretation, fertilizer recommendation, and application, though should be performed as close to seeding as practical.

Table 7: Sampling Soil

<p>The goal is to collect a small sample that is homogenous and characteristic of the entire field. To minimize laboratory costs, soil samples are generally collected from several locations within a field and mixed in a clean bucket prior to submitting to an analytical laboratory.</p>	<ol style="list-style-type: none"> 1. Samples should be collected and divided into depth increments such as 0-6, 6-12, and 12-24 inches, as necessary. Soil samples analyzed for nitrogen require a 24" sample, whereas soil samples analyzed for phosphorus require a 6" sample. 2. Individual soil cores from a minimum of 20 locations should be collected. Uniform fields may be sampled in a simple random, stratified random, or systematic pattern such as an "X", "W", or "M". 3. Each depth increment should be mixed thoroughly in a large plastic container, sub-sampled, and placed into a plastic-lined soil sampling bag or glass jar. Laboratories will usually supply sampling bags. 4. A small volume of material should be collected from the plastic container, sealed, and sent to the laboratory for analysis.
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Calibrating Spreaders

Two approaches for calibrating a manure spreader include the Load-Area and the Weight-Area methods. Although the load-area method can be used for both liquid and solid manure, the weight-area method works only with solid or semi-solid manure.

Load Area Method

The load area method is a three-step process. In order to correctly calculate the application rate, the entire capacity of the spreader should be applied.

1. Determine the amount of manure in the spreader. The most accurate way to determine the amount of manure in a spreader is weighing the spreader when it is empty and again when it is full. For a reliable estimate of spreader capacity, weigh several representative spreader loads (recommended five) to determine the average gross weight. Subtract the

empty spreader weight to calculate the average net loaded weight. If a scale is not available, volume and density estimates can be used to determine the approximate weight. For liquid manure spreaders, the volume capacity in gallons should be used.

2. Determine the distance between travel lanes and the total distance traveled.
3. Calculate the application rate. The following formulas for liquid or solid manure should be used to calculate the application rate:

Formula for Solid Manure:

$$\text{Tons per acre} = \frac{\text{Average Net Loaded Weight (lbs.)} \times 21.8}{\text{Distance Traveled (ft.)} \times \text{Distance between Travel (ft.)}}$$

Formula for Liquid Manure:

$$\text{Gallons per acre} = \frac{\text{Tank Volume (gal.)} \times 43,560 \text{ ft}^2/\text{acre}}{\text{Distance Traveled (ft.)} \times \text{Distance between Travel (ft.)}}$$

Weight Area Method

When a scale is not available, the application rate may be estimated by collecting manure on a tarp or sheet of plastic. This method consists of eight steps:

1. Prepare/cut three 56" x 56" tarps or sheets of plastic. The pounds of manure collected on a 56" square equals the tons of manure applied per acre.
 2. Place one of the clean tarps in a large bucket and weigh both on a platform scale.
 3. Record the weight.
 4. Lay the three tarps in the field near the beginning, middle, and end of the area that will be spread with one load.
 5. Drive the spreader over the three tarps at a normal operating speed.
 6. Fold and place the first tarp in the empty bucket without spilling the manure.
 7. Weight the bucket, tarp, and manure. Subtract the weight of the clean tarp and bucket recorded in Step 2.
 8. Repeat the process for each of the two remaining tarps.
- Average the weight (pounds) of the manure collected on all three tarps. This value equals the tons of manure applied per acre.

Operation and Maintenance Guide

Art Viall Ag Waste Project

Temporary Waste Storage Pond – This earthen pond is designed to hold the feedlot runoff for up to 48 hours and has a 25 year storm capacity. A pump will be installed to empty the pit via a 6" PVC pipeline for discharge onto the Vegetated Treatment Area. A 15' wide grass buffer strip will be constructed on the north side of the pit to filter feedlot runoff prior to entering the pit. Runoff from the silage pit site will also be directed into this pond.

- Inspect the pit and filter strip periodically, especially immediately following significant storm events.
- Promptly repair eroded sections and washouts.
- Maintain design capacity.
- Remove sediment, debris, or any other blockage that restricts capacity.
- Eradicate or otherwise remove all rodents or burrowing animals. Immediately repair any damage caused by their activity.
- Maintain vegetative cover on filter strip.
- Maintain livestock exclusion fences.

Vegetative Treatment Area – This 3.7 acre pre-established alfalfa field, located to the north of the feedlot, will be used to utilize the effluent runoff from the feedlot without any deep percolation or runoff out the end. It is important that the grass cover is well maintained so that the nutrients can be utilized without causing pollution. The existing tail water ditch will be eliminated.

- Control undesired weed species.
- Inspect and repair treatment area after storm events to fill in gullies, remove flow disrupting sediment accumulation, re-seed disturbed areas, and take other measures to prevent concentrated flow.
- Apply supplemental nutrients as needed to maintain the desired species composition and stand density.
- Maintain or restore the treatment area as necessary by periodically grading when deposition jeopardizes its function, and then reestablishing to herbaceous vegetation.
- Routinely de-thatch and/or aerate the treatment area in order to promote infiltration.
- Conduct maintenance activities only when the treatment area is dry and moisture content in the surface soil layer will not allow compaction.
- Prevent grazing in treatment strip.

Dike – Dikes are constructed to control water flow and to provide freeboard in the temporary waste storage pond. An existing drain ditch will serve as a collector to contain and direct all feedlot runoff to the temporary waste storage pit. A new drain ditch will be excavated to replace the existing drain ditch which will divert clean water around the pond.

Diamond K Feeds and Feeding
Manure Application Record

Field:
Acres:
Target Rate:

ton/acre

Tractor:
RPM:
Gear:

Estimates	
3rd gear	25 tpa
4th gear	15 tpa
5th gear	10 tpa

[illegible][illegible]

TEST WEIGHTS

[illegible]

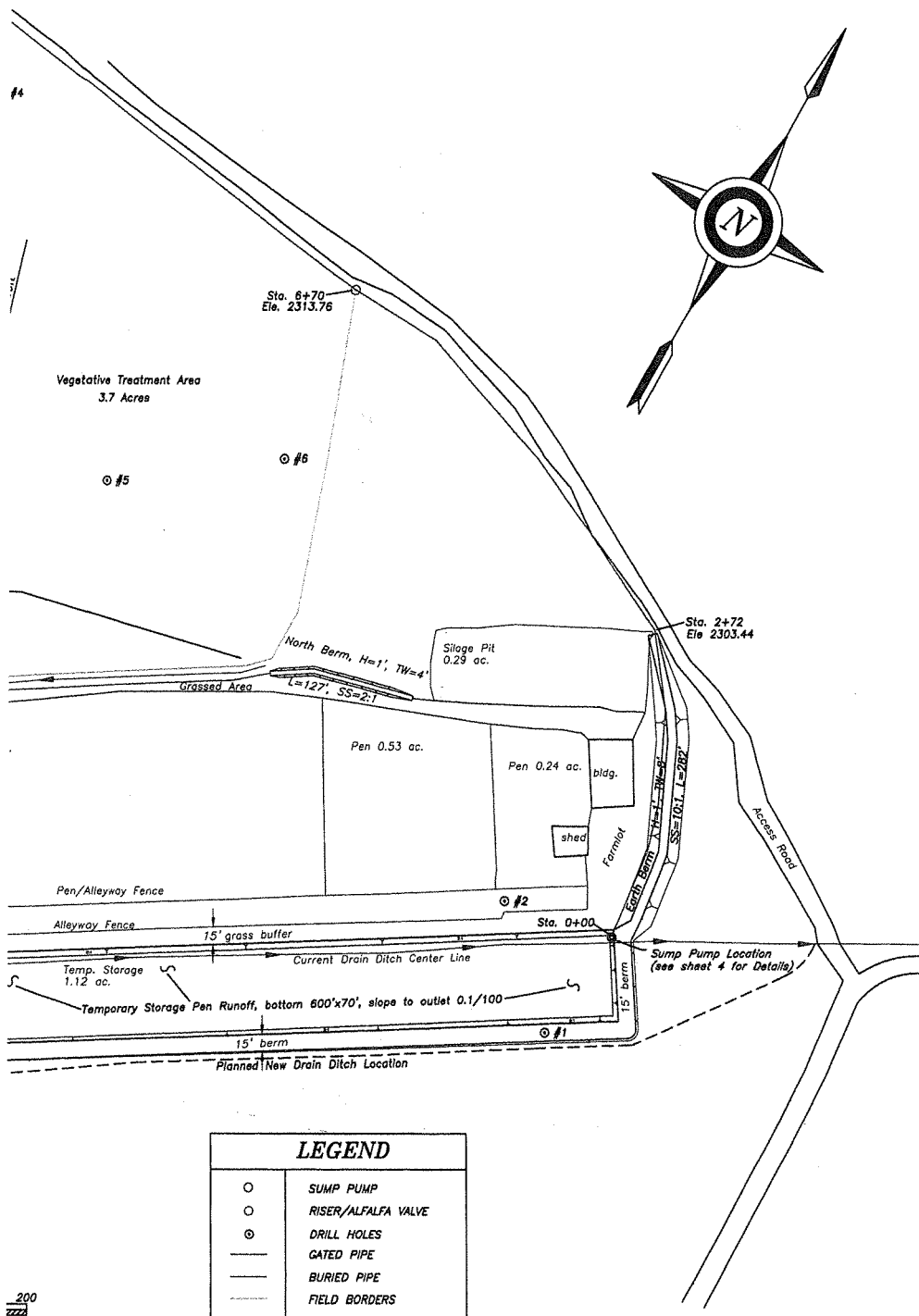
Attach Weigh Tickets

ACTUAL RATE

Total Loads	Avg Wt	Total Tons	Tons/Acre

Notes:

1. Obtain target ton/acre from current NMP
2. Do not spread manure within 100' of the lower ends of fields (leave a buffer strip to help reduce nutrient rich runoff).



DESIGNED		PAH	08/10	APPROVED
DRAWN		PAH	08/10	TITLE
REVISED				TITLE
CHECKED				

PLAN MAP/QUANTITIES LIST
AFO/CAFO FEEDLOT AG WASTE PROJECT
DIAMOND K FEEDERS - ART VIALI EQUIP 2010
CUSTER COUNTY
MONTANA
U.S. DEPARTMENT OF AGRICULTURE - NATURAL RESOURCES CONSERVATION SERVICE

CAD FILE NAME
AVIallMap.dwg

DRAWING NO.
MT-MC-14-AV1

SHEET 2 OF 2

JOB CLASS III

CONSTRUCTION NOTES

1.0 Background information: Feedlot capacity is 1500 head of calves, start weight of 500lbs. and finishing at approx. 800lbs. The pens are generally cleaned in early September.

2.0 The waste utilization system is designed based on a 25 year-24 hour event with the total runoff accumulation of 1.03 acre feet. The 200 gpm flow rate will allow the operator to disperse the water on to the vegetative treatment area continuously in 28 hours or periodically with $\frac{3}{4}$ hour sets over 2 days (48 hours).

3.0 Planned VTA is an existing surface irrigated alfalfa field with 8-45' borders. No earthwork is needed. Field is irrigated with 10" gated pipe which will be used for effluent discharge.

4.0 Establish and maintain permanent vegetative cover in VTA (Vegetative Treatment Area), grass and alfalfa mix. - refer to job sheet for seeding rates.

5.0 NRCS makes no representation on the existence or non-existence of any buried utilities. Call before you dig 1-800-424-5555.

6.0 Follow manufacturers recommendations for pipe joint deflection. Allowable longitudinal bending for 6" pressure rated pipe in 20ft lengths is no greater than a 22" offset.

7.0 The minimum pipe cover shall be 30". Refer to the Profile Views for buried pipe trench elevations (see construction profile sheet 3).

8.0 Shape and grade pens to provide surface drainage to temporary storage basin.

9.0 For winterization, the pipeline is designed to be pumped out of the dog leg at the pump.

10.0 The drain ditch along the South end of the VTA will be filled in to prevent any runoff.

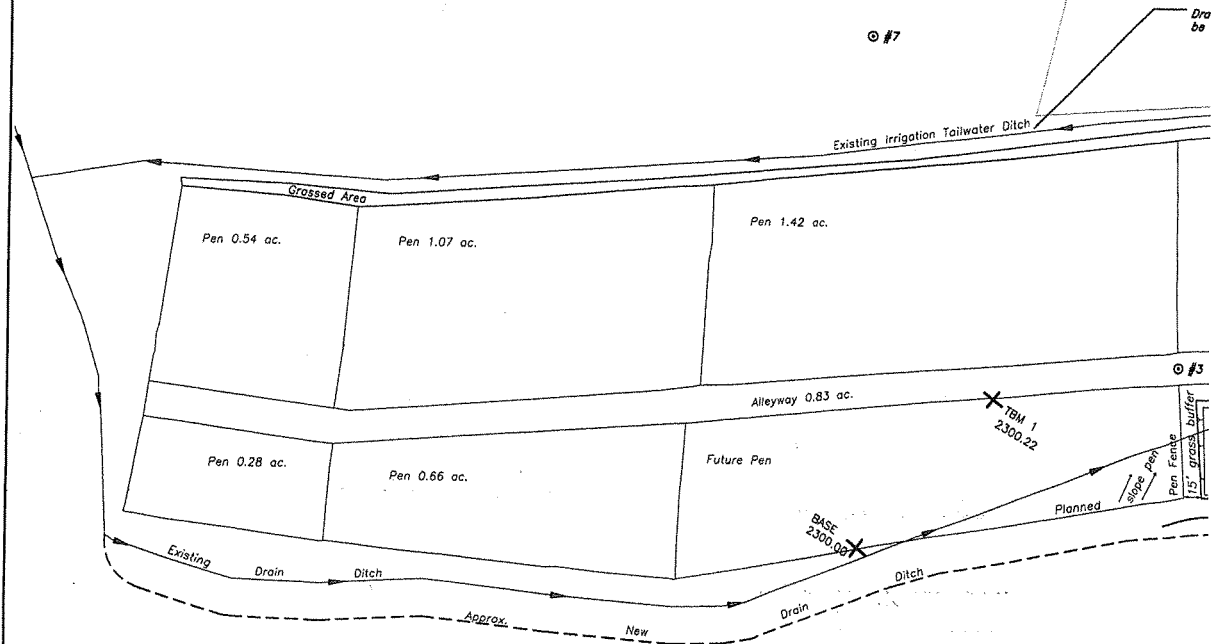
ESTIMATED MATERIAL LIST

Planned	Constructed	
1		Sump Pump 200gpm @ 25ft TDH
1		Sump Structure Concrete 1.79 cu. yd.
1		Trash Rack
1		6" Butterfly Valve
1		6" Check Valve
1		Pressure relief valve
1		6" Steel Dog Leg
670 ft.		Trenching
670 ft.		6" 1120 PVC SDR 51 PIP 80psi
1		6" 90° PVC Elbow
1		6" Alfalfa Valve w/Hood
.07 cu.yd.		Concrete Thrust Blocks
2500 cu.yd.		Temporary Storage Pond - Excavation
237 cu.yd.		Temporary Storage Pond Berm - Fill
207 cu.yd.		Form Lot Berm - Fill
31 cu.yd.		North Diversion Berm - Fill

Sta. 11+20
Elev. 2316.77

SOIL LOGS

Drill Hole	Depth	Description
#1-#3	0-2'	SICL
	2-8'	SICL
	4'	Water Table
#4-#7	0-2'	L
	2-8'	SL
	>8'	Water Table



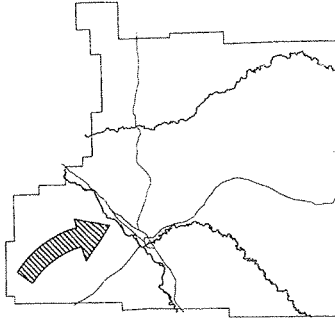
Art Viall Feedlot
Custer Co, MT
Surveyed: 3/26/2010
By: JDC & PH
Plotted: 4/13/2010
Scale: 1" = 100'

Within the confines of this project area there may be buried utilities. Call 1-800-424-5555 to locate buried utilities.

100 50 0 100
Scale in

PLANS FOR THE CONSTRUCTION OF
DIAMOND K FEEDERS - ART VIAL
AFO/CAFO FEEDLOT AG WASTE PROJECT
NATURAL RESOURCES CONSERVATION SERVICE

Project Location
Custer County



SHT NO.	TITLE
1.	Location Map/Index of Drawings
2.	Plan Map/Quantities List
3.	Pipeline Profile View
4.	Sump Pump & Sump Details
5.	Temporary Feedlot Runoff Pond
6.	Runoff Pond Cross Sections 1
7.	Runoff Pond Cross Sections 2

CONSTRUCTION SPECIFICATIONS
<p>General Requirements</p> <p>Clearing, Grubbing, Structure Removal</p> <p>Excavation</p> <p>Earthfill</p> <p>Reinforced Concrete for Minor Structures</p> <p>Plastic Pipe - Pressure Conduits</p> <p>Metal Fabrication and Installation</p> <p>Pumping Plant Specifications</p>
<p>MT-100</p> <p>MT-101</p> <p>MT-104</p> <p>MT-105</p> <p>MT-106c</p> <p>MT-111</p> <p>MT-113</p> <p>MT-533</p>

LEGEND
<p>SUMP PUMP SITE</p> <p>PEN FENCES</p> <p>TEMPORARY STORAGE POND</p> <p>CURRENT DRAIN DITCH</p> <p>PLANNED DRAIN DITCH</p> <p>6" BURIED PIPE</p> <p>GATED PIPE</p>



Scale 0 250 500 1000 Feet

R 48E

Within the confines of this project area there may be buried utilities. Call 1-800-424-5555 to locate buried utilities.

LOCATION MAP/INDEX OF DRAWINGS
AFO/CAFO FEEDLOT AG WASTE PROJECT
DIAMOND K FEEDERS - ART VIAL EGP 2010
CUSTER COUNTY - NATURAL RESOURCES CONSERVATION SERVICE
MONTANA

CAD FILE NAME
DRAWING NO
MT-MC-14-AV1
SHEET 1 OF 1

JOB CLASS III

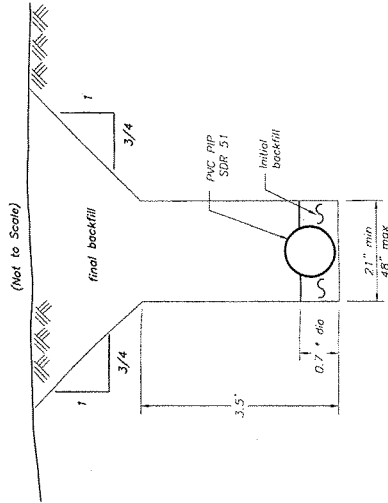
DATE 03/10
DESIGNED PAH
DATE 03/10
DRAWN PAH
CHECKED
TITLE

T 9N

PIPELINE GRADE TABLE

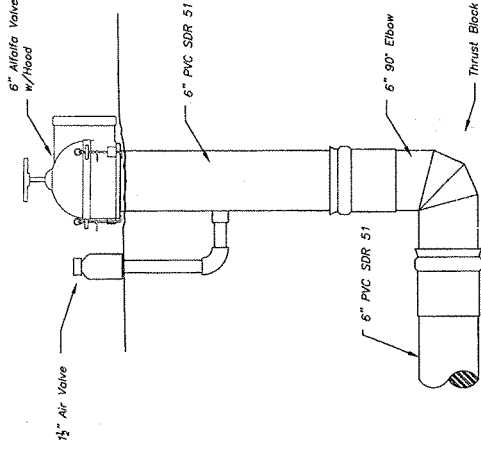
Station	Pipe Size(in)	Ground Ele.(ft)	Slope (ft/100ft)	Cut(ft)	Top of Pipe Ele.(ft)	Cover(ft)
0+00	6" PVC	2298.75	0.14	3.00	2296.25	2.50
0+79	6" PVC	2298.86	0.85	3.00	2296.36	2.50
2+02	6" PVC	2300.40	3.27	3.50	2297.40	3.00
4+50	6" PVC	2308.51	1.20	3.50	2305.51	3.00
5+87	6" PVC	2310.16	4.34	3.50	2307.16	3.00
6+70	6" PVC	2313.76		3.50	2310.76	3.00

Minimum cover shall be 30 inches at all buried PVC locations. Minimum slope of the PVC shall be no less than 0.10 ft per 100 ft.



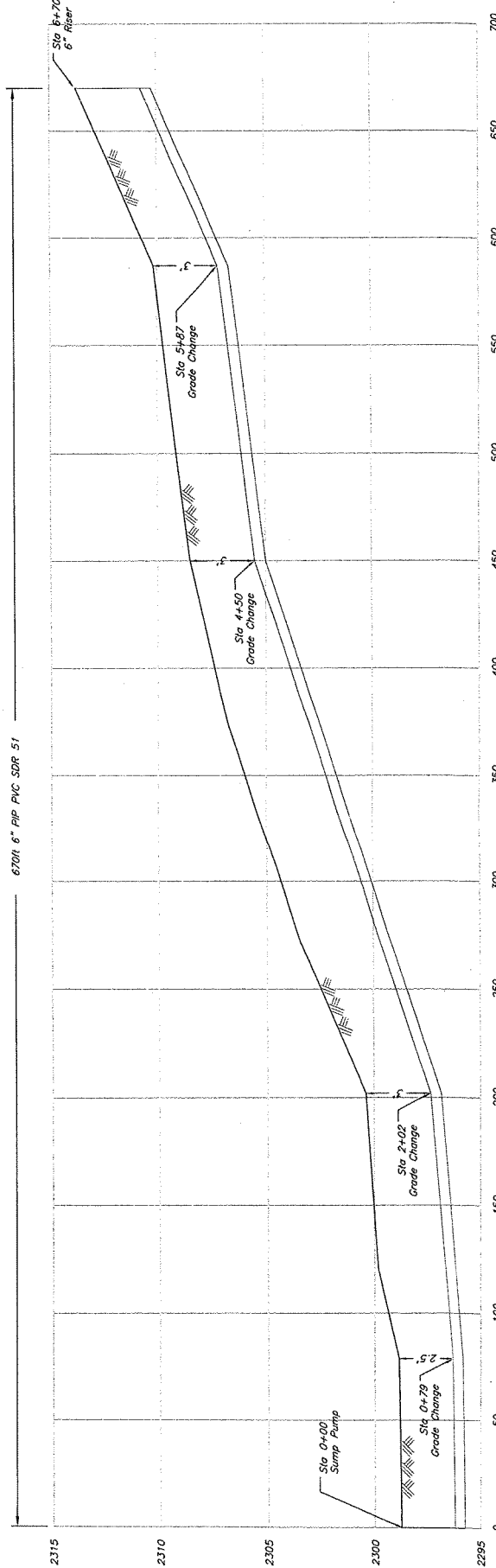
TYPICAL TRENCH DETAILS

TRENCHING NOTES:
 (Trench shall be constructed in accordance with OSHA requirements)
 Note: Pipe shall be backfilled so the trench walls are supported to the full depth of the pipe to a depth of 0.7 times the pipe diameter, using a digging bar or other mechanical means capable of achieving these requirements.
 The initial backfill shall be compacted firmly around and above the pipe as required to provide adequate lateral support to the pipe.
 This method shall be done for the entire length of pipeline.



RISER DETAIL

STA 6+70



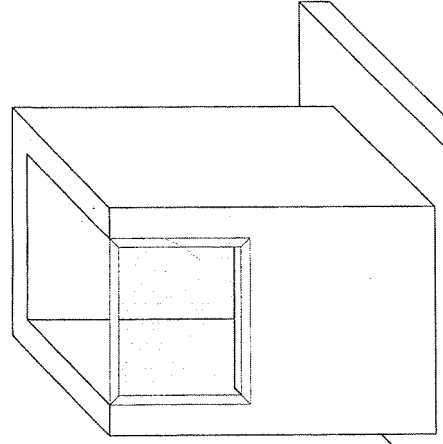
PIPELINE PROFILE

JOB CLASS III

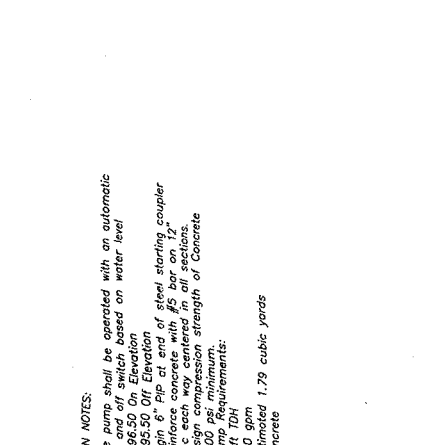
U.S. DEPARTMENT OF AGRICULTURE - NATURAL RESOURCES CONSERVATION SERVICE
 CUSTER COUNTY
 DIAMOND K FEEDERS - ART VIAL EQUIP 2010
 PIPELINE PROFILE VIEW

CAD FILE NAME
 A:\VialPipePro.dwg
 DRAWING NO
 MT-MC-14-AV1
 SHEET 3 OF 2

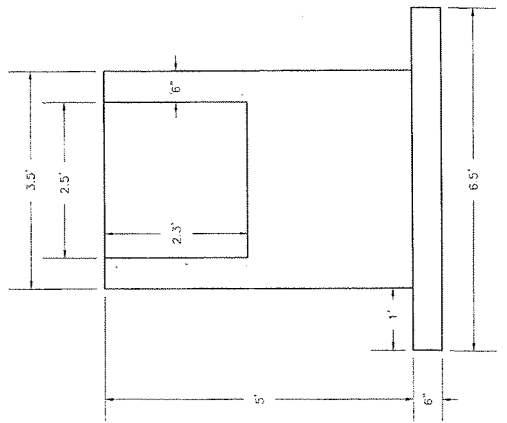
DESIGNED PAH 08/10
 DRAWN PAH 08/10
 CHECKED TMLC
 APPROVED TMLC



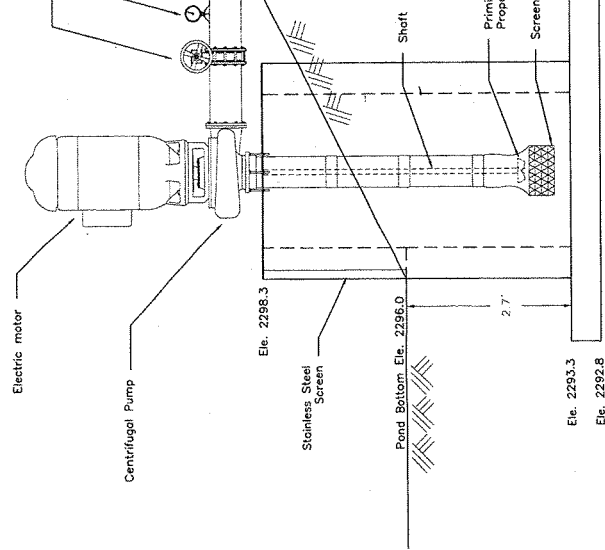
ISOMETRIC VIEW



PLAN VIEW



ELEVATION VIEW



SIDE VIEW

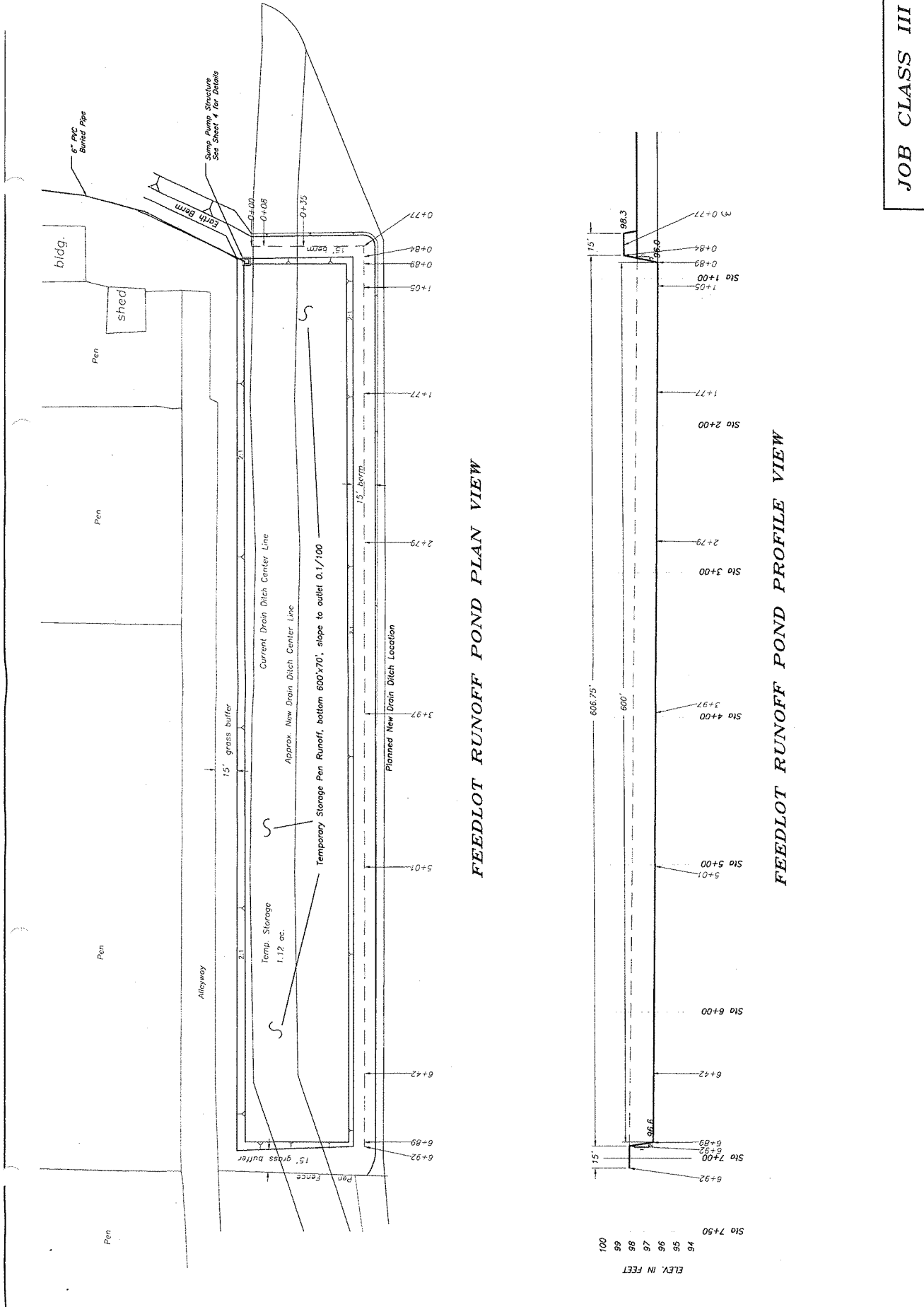
Drawing Scale
1" = 2'

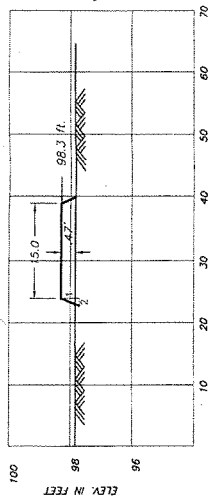
JOB CLASS III

- DESIGN NOTES:
- The pump shall be operated with an automatic on/off switch based on water level.
 - 2296.50 Off Elevation
 - 2295.50 Off Elevation
 - Begin 6" Pip at end of steel starting coupler
 - Reinforce concrete with #5 bar on 12"
 - 6" each way centered in all sections.
 - 3000 psi minimum strength of Concrete
 - Pump Requirements:
 - 23ft TDH
 - 200 gpm
 - Estimated 1.79 cubic yards concrete

U.S. DEPARTMENT OF AGRICULTURE - NATURAL RESOURCES CONSERVATION SERVICE CUSTER COUNTY MONTANA DIAMOND K FEEDERS - ART VIAL EQUIP 2010 AFO/CAFO FEEDLOT AG WASTE PROJECT TEMPORARY FEEDLOT RUNOFF POND		CAD FILE NAME TempManure.dwg DRAWING NO. MT-MC-14-AVI SHEET 5 OF 7
DESIGNED: PAH 08/10 APPROVED:	CHECKED:	TITLE:

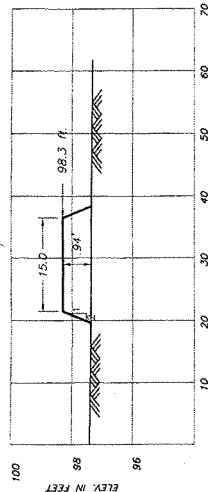
JOB CLASS III





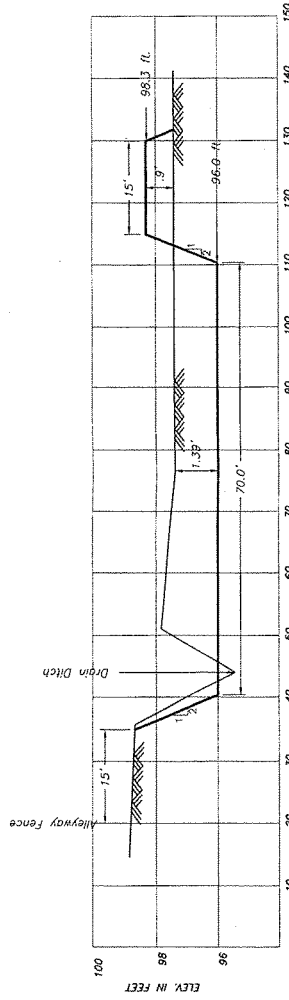
Fill Area: 7.41 sq ft

0+08 CROSS SECTION



Fill Area: 15.92 sq ft

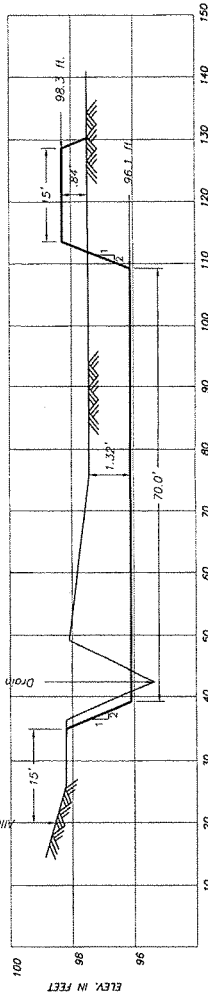
0+35 CROSS SECTION



Cut Area: 98.16 sq ft
Fill Area: 15.04 sq ft

Avg. Cross Section Area from 1+05 to 1+77: 98.88 sq ft
Distance from 1+05 to 1+77: 72 ft
Cut Volume=98.88*72=7,119.36 cft=243.68 cy

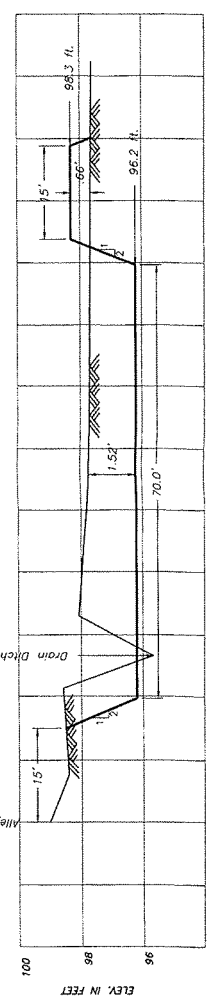
1+05 CROSS SECTION



Cut Area: 98.59 sq ft
Fill Area: 13.99 sq ft

Avg. Cross Section Area from 1+77 to 2+79: 104.62 sq ft
Distance from 1+77 to 2+79: 102 ft
Cut Volume=104.62*102=10,671.24 cft=355.33 cy

1+77 CROSS SECTION



Cut Area: 110.64 sq ft
Fill Area: 10.68 sq ft

2+79 CROSS SECTION

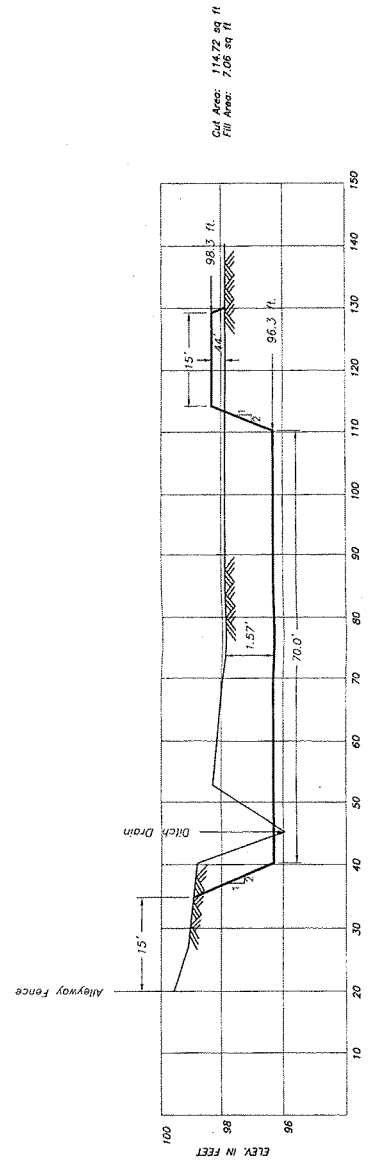
Avg. Cross Section Area from 0+48 to 0+89: 40.58 sq ft
Distance from 0+48 to 0+89: 5 ft
Cut Volume=40.58*5=202.9 cft=6.78 cy

Avg. Cross Section Area from 0+89 to 1+05: 98.16 sq ft
Distance from 0+89 to 1+05: 15 ft
Cut Volume=98.16*15=1,472.4 cft=48.82 cy

Note: Cut and fill volumes were calculated by determining the average area between two cross sections and multiplying by the distance between the cross sections.

JOB CLASS III

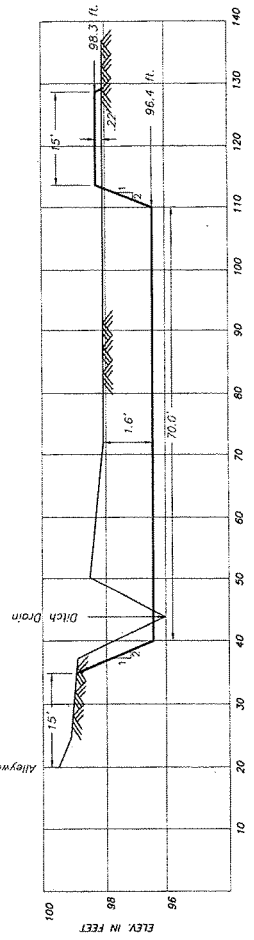
Total Cut Volume: 2,483.5 cy
 Total Fill Volume: 214.82 cy



3+97 CROSS SECTION

Avg. Cross Section Area from 2+79 to 3+97: 112.68 sq ft
 Distance from 2+79 to 3+97: 118 ft
 Cut Volume=112.68*118=13,296.24 cft=492.45 cy

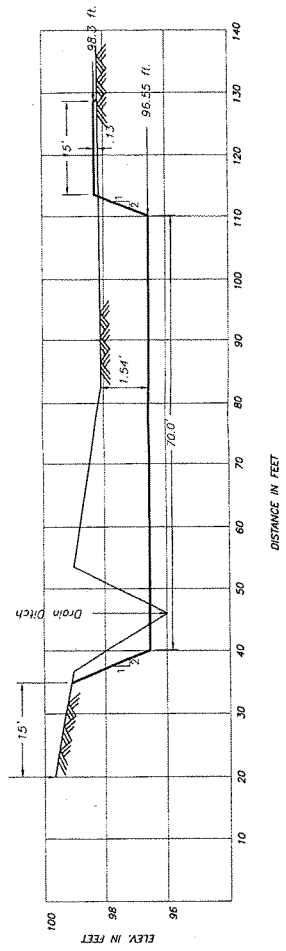
Avg. Cross Section Area from 3+97 to 5+01: 114.8 sq ft
 Distance from 3+97 to 5+01: 104 ft
 Cut Volume=114.8*104=11,939.2 cft=442.19 cy



5+01 CROSS SECTION

Note: Cut and fill volumes were calculated by determining the average cross section area between cross sections and multiplying by the distance between the cross sections.

Avg. Cross Section Area from 5+01 to 6+42: 116.65 sq ft
 Distance from 5+01 to 6+42: 141 ft
 Cut Volume=116.65*141=16,447.65 cft=600.17 cy



6+42 CROSS SECTION

Avg. Cross Section Area from 6+42 to 6+89: 118.49 sq ft
 Distance from 6+42 to 6+89: 47 ft
 Cut Volume=118.49*47=5,569.03 cft=206.26 cy
 Avg. Cross Section Area from 6+89 to 6+92: 59.25 sq ft
 Distance from 6+89 to 6+92: 3 ft
 Cut Volume=59.25*3=177.75 cft=6.58 cy